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FEB 25 1998

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

**Federal Communications Commission
Office of Secretary**

Petition of U S WEST Communications, Inc.
for Relief from Barriers to Deployment
of Advanced Telecommunications Services

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CC Docket No. 98-12

PETITION FOR RELIEF

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February 25, 1998

SUMMARY

U S WEST Communications, Inc. ("U S WEST") files this Petition for Relief pursuant to 47 C.F.R. §§1.1, 1.3, and 1.401, as well as Section 706 of the Telecommunications Act of 1996. U S WEST respectfully asks the Commission to forbear from imposing certain regulatory restrictions that frustrate the deployment to rural America of advanced telecommunications capabilities. In particular, U S WEST asks the Commission (1) to allow it to build and operate packet- and cell-switched data networks across LATA boundaries, (2) to permit it to carry interLATA data traffic incident to its provision of digital subscriber line services, (3) to forbear from requiring U S WEST to unbundle for its competitors the non-bottleneck network elements used to provide these data services, and (4) to forbear from requiring U S WEST to make these competitive services available at a wholesale discount for resale. Expedited consideration is requested.

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PETITION FOR RELIEF

U S WEST Communications, Inc. ("U S WEST") respectfully petitions the Commission to forbear from imposing certain regulatory restrictions that frustrate the deployment to rural America of advanced telecommunications capabilities such as digital subscriber line technologies and data networking services. In particular, U S WEST asks the Commission (1) to allow it to build and operate packet- and cell-switched data networks across LATA boundaries, (2) to permit it to carry interLATA data traffic incident to its provision of xDSL services, (3) to forbear from requiring U S WEST to unbundle for its competitors the non-bottleneck network elements used to provide these data services, and (4) to forbear from requiring U S WEST to make these competitive data services available at a wholesale discount for resale. Granting this petition will allow U S WEST to expand its data offerings in a way that will increase the services available to the public and enhance the ability of all information service providers to offer advanced services, while also enabling competitive providers of data telecommunications to use U S WEST's underlying transmission facilities to serve their customers. U S WEST files this petition pursuant to 47 C.F.R. §§ 1.1, 1.3, and 1.401, as well as Section 706 of the Telecommunications Act of 1996. Expedited consideration is requested.

PRELIMINARY STATEMENT

The primary goal of the Telecommunications Act, as stated in its title, is “to promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies.” Pub. L. No. 104-104, 110 Stat. 56 (1996). To this end, Congress directed the Commission to “encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans” and authorized it to use “regulatory forbearance . . . or other regulating methods that remove barriers to infrastructure investment.” Act § 706(a), codified at 47 U.S.C. § 157 note (emphasis added). The Act requires the agency to determine “whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion,” and, if not, the Commission must “take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition.” Act § 706(b) (emphasis added).

Congress’s references to securing these advanced technologies for “all” Americans were deliberate. Congress recognized that rural areas of the country do not currently have the same access to telecommunications services as urban areas, and that economic barriers and low population densities make it more difficult to deploy advanced services and technologies in smaller communities. Accordingly, the Act expresses a special concern that rural Americans not be left behind: “Consumers in all regions of the Nation, including . . . those in rural, insular, and high-cost areas, should have access to telecommunications and information services, including . . . advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas.” 47 U.S.C. § 254(b)(3). See also id.

§ 254(b)(2) (“Access to advanced telecommunications and information services should be provided in all regions of the Nation.”) (emphasis added).

U S WEST is uniquely positioned to invest in the infrastructure needed to bring advanced data telecommunications and information services to “all Americans,” including residential and small-business customers, and those in harder-to-reach smaller and rural communities. It has proven itself willing and able to serve these markets. U S WEST has made by far the greatest investment in telecommunications infrastructure of any carrier in its largely rural region. It is currently rolling out advanced high-bandwidth copper-loop technologies on an aggressive schedule throughout the fourteen states in which it is an incumbent local exchange carrier. Outside that region, where the restrictions that are the subject of this petition do not apply, U S WEST has demonstrated its capability to provide customers with a full range of advanced communications, networking, and information services, and its determination to compete for the opportunity to do so.

But regulatory barriers prevent U S WEST from doing much of what it could accomplish. In its own region, U S WEST is barred outright from some advanced-service markets that would benefit enormously from new entry; for example, even though smaller communities’ links to the internet are low-bandwidth and usually congested, U S WEST is not allowed to compete to provide regional internet backbone services because it may not carry data traffic across LATA boundaries. Other regulatory burdens often make it prohibitively expensive for U S WEST to deploy advanced technologies and service in rural areas, even where it is allowed to do so; for example, it may never make economic sense for U S WEST to deploy the equipment needed to provide digital subscriber line services in thinly populated areas if it cannot

aggregate data traffic from different LATAs over its own facilities. Still other regulations, such as the Commission rules which can be read to apply the Act's unbundling and resale provisions to competitive new offerings, operate to blunt U S WEST's incentives to develop and invest in advanced technologies by requiring it to turn its innovations over to competitors risk-free at prices that may not even allow the company to recover its development costs, let alone realize the returns that normally follow successful innovation in a competitive market. U S WEST now asks the Commission to use its statutory authority to remove these barriers, and thereby carry out Congress's promise to "all Americans," including residential and rural customers.

U S WEST asks for relief from four particular regulatory burdens: the bar on building and operating cell- and packet-switched data networks that cross LATA boundaries, restrictions on interLATA data transport incident to providing digital subscriber line services, unbundling obligations for non-bottleneck data facilities, and duties to offer competitive data services to resellers at a discount.^{1/} U S WEST notes that the regulatory relief it seeks in this petition is targeted and limited. U S WEST is not asking here for complete deregulation of these technologies, nor does it seek to avoid its obligation to make bottleneck facilities (such as the local loops over which digital subscriber line services operate, or central-office collocation space) available to its CLEC competitors. However, there are many other Commission rules originally designed to govern incumbent carriers' traditional circuit-switched offerings that

^{1/} As described in greater detail below, many of these services do not fit within the definition of "telephone exchange service," and accordingly would not be covered by the Act's unbundling and discounted resale language. The blanket waiver sought here would eliminate the uncertainty caused by the failure of the Commission's rules to distinguish between incumbent LECs' traditional "telephone exchange service" offerings and their advanced data offerings, an uncertainty that itself hinders the deployment of advanced technology and services.

should not be applied to their offerings of advanced data services, and U S WEST will in the future request forbearance from enforcement of these other regulations on the ground that they are unnecessary to ensure reasonable pricing or avoid discrimination in a competitive market. See 47 U.S.C. §§ 160, 161. Here, however, it seeks only the limited regulatory relief necessary to advance the deployment of specific data networking and transmission services in its region.

The relief requested herein will further the development of competition in the markets for internet access and other data networking services. U S WEST is committed to providing its data services in a manner that increases customers' choices of service providers, even in smaller communities. U S WEST currently offers the data telecommunications services discussed in this petition on an equal basis to all internet service providers ("ISPs"), including U S WEST's own internet access service. If relief is granted, end users will be able to enjoy the full benefits of U S WEST's expanded data services whether they subscribe to U S WEST's internet access service or an unaffiliated ISP. U S WEST will also continue to make unbundled conditioned loops and collocation space available at cost-based prices to ensure that competitive carriers can provide their own data telecommunications services to customers. For these reasons, granting the relief requested would not only benefit U S WEST's residential and business local exchange subscribers, but would also dramatically improve the ability of competing ISPs and carriers in U S WEST's region to offer high-bandwidth services, in both respects speeding the deployment of advanced services to rural consumers.

BACKGROUND

U S WEST and Its Region

U S WEST's fourteen-state region encompasses some of the most sparsely populated areas in the country and the most rugged terrain in the continental United States. U S WEST's 1,266 wire centers serve 284,000 square miles of territory. Thirty-five of these wire centers serve an area larger than 1,000 square miles each; together, they serve 59,000 square miles, or almost 21%, of U S WEST's total service area. These wire centers average a mere 3.71 residential loops per square mile served. Ninety more wire centers serve areas ranging from 500 to 1,000 square miles each, together representing another 61,600 square miles, or almost 22% of U S WEST's territory; on average, these wire centers serve only 10.7 residential loops per square mile. Data from the Commission's Industry Analysis Division confirm this picture of U S WEST's region: U S WEST serves five of the ten states requiring the greatest monthly per-loop universal service support payments, and eight out of the top twenty.^{2/}

U S WEST's position in its region makes it the most likely company to deploy advanced telecommunications and information services on a widespread basis to rural America, as Congress intended. U S WEST is by far the largest local exchange carrier in its fourteen states, and it is required by law to serve virtually all of the residential and business customers in its service areas. In 1997 alone, U S WEST invested more than \$1.9 billion of capital to construct, improve, upgrade, and repair the telephone network within its region. Moreover, it is committed to deploying advanced data networking and transmission services as broadly as

^{2/} See Industry Analysis Division, Universal Support and Telephone Revenue by State, at 13 (Table 2: "USF High Cost Support"), Jan. 1998.

possible throughout its region, and its roll-out of these services has been the most aggressive of any local exchange carrier in the nation. The following examples illustrate what U S WEST has already accomplished in its region:

- **Frame relay services.** U S WEST's frame relay operations are the largest of any local exchange carrier in the nation and the third largest (behind AT&T and Sprint) overall. U S WEST has deployed over 350 frame switches across all 14 states of its region (the largest capital commitment of any carrier) and had over 47,000 customer ports at the end of 1997. It has built a statewide network in Utah (a single-LATA state) and LATA-wide networks in Oregon. U S WEST offers a complete range of access options, from 56 kilobits per second to DS-3.
- **Cell relay services/ATM.** U S WEST has deployed over 100 next-generation ATM switches across ten of its states. This technology builds on and is interoperable with U S WEST's frame relay services. The company is working with the State of Wyoming to build a statewide network to provide schools with ATM access. (Wyoming is also a single-LATA state.) U S WEST offers customers ATM access at speeds of up to DS-3 and OC-3.
- **Digital subscriber line technologies.** U S WEST recently announced the most aggressive roll-out of digital subscriber line services of any carrier in the country. As part of this roll-out, the company is currently deploying asymmetric digital subscriber line equipment in 226 central offices and wire centers in 43 cities across every one of its 14 states. Sales of these services will begin in April. U S WEST will offer users a complete range of access from 256 kilobits per second up to 7 megabits per second, with host-site connections as fast as 155 megabits per second.

As much as U S WEST has been able to achieve in its fourteen-state region, the company is capable of providing much more. Where U S WEST is not subject to the regulatory restrictions that apply to it in-region, the company is eager and able to provide customers with a full range of integrated, end-to-end data networking services. U S WEST was the first Bell company to offer out-of-region interLATA data transport services in competition with interexchange carriers' services. These include a "Super Port" service that combines local data transport with interLATA transport, internet services, operations support, equipment

maintenance, and systems integration services. To support these services, U S WEST has entered into alliances with Qwest and Williams Communications to build an intercity data transport network (the InterACT network) that will cover the top 80 markets outside its region. This network will enable U S WEST to provide its customers with end-to-end solutions for all their data transport needs, and to guarantee the quality of its network services. Together, these activities confirm that U S WEST is willing and able to deploy the advanced communications and information services that Congress hoped to bring to “all Americans” and to “all regions of the Nation” by passing the Telecommunications Act.

High-Speed Data Networks and Smaller Communities

Smaller communities currently face an acute shortage of data bandwidth, especially (but not exclusively) the Transmission Control Protocol/Internet Protocol (TCP/IP) facilities that make up the “internet backbone” — the highest levels of the hierarchy of networks that collectively make up the internet.^{3/} At the bottom are the millions of individual and corporate customers who subscribe to the retail access offerings of the thousands of ISPs nationwide.^{4/} For the most part, these retail customers connect to their ISPs through dial-up

^{3/} In light of the Commission’s particular concern with ensuring that rural communities can connect to the “information superhighway,” this discussion focuses on the scarce deployment of TCP/IP networks (i.e., internet backbone) in these areas. Section 706, however, directs the Commission to advance the deployment of “advanced telecommunications capability” more broadly, and is not limited to TCP/IP networks. The pace of deployment of these other data technologies (cell-switched and packet-switched networks) in rural communities likewise lags behind deployment in their urban counterparts, and for similar reasons.

^{4/} As shown in the illustration, there are actually several tiers of ISPs. In addition to serving retail end users directly, many large ISPs wholesale internet transit services to smaller
(continued...)

access over the circuit-switched voice network or, for many corporate customers, via private lines. (Faster means of connecting, such as megabit-speed digital subscriber lines, are rapidly becoming available, and one aim of this petition is to accelerate the deployment of these high-bandwidth connections.) Each ISP, in turn, routes its subscribers' data traffic upward in the hierarchy to the network of a regional or national backbone provider, using a leased line that connects to the modem banks and routers that make up the backbone provider's local point of presence, or "PoP." The backbone provider carries this traffic between the nodes of its network on high-speed lines (with the fastest lines connecting the largest nodes of the network) and, if necessary, exchanges the traffic with other backbone providers at high-capacity internet exchange points. The traffic is then routed downward through the hierarchy to its destination.

The facilities that make up the internet backbone are not evenly distributed across the country. The high-speed links of the network — DS-3 links (45 megabits per second) and above — connect only the largest cities, leaving smaller communities behind. Illustrations 1-7 demonstrate this problem vividly.^{4/} These maps show, for each of the largest backbone networks (PSINet, GTE/BBN, WorldCom, MCI, Digex, Sprint, and AT&T), which cities are connected to the internet with high-capacity (DS-3 or faster) PoPs.^{5/} At best, each network has only a handful

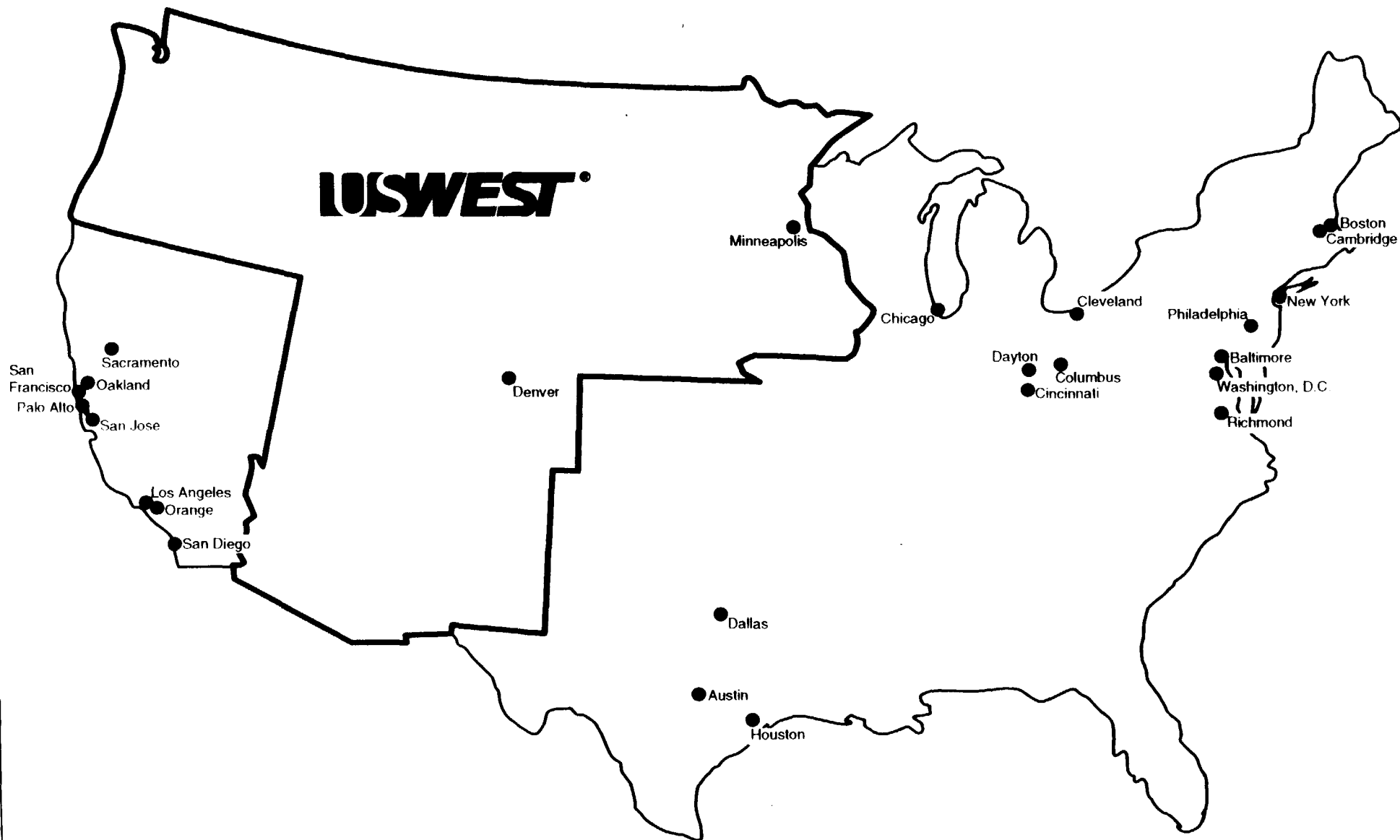
^{4/} (...continued)
ISPs, who in turn sell internet access to end users.

^{5/} This information is drawn from Boardwatch Magazine's February 1998 survey of TCP/IP backbones that are national in scope, peer at the major Network Access Points, and are connected with DS-3 or faster links. See <http://www.boardwatch.com/ISP/backbone.html>.

^{6/} There are a number of smaller nationwide backbone networks in addition to the ones listed. To the extent that these smaller providers operate high-speed PoPs in U S WEST's
(continued...)



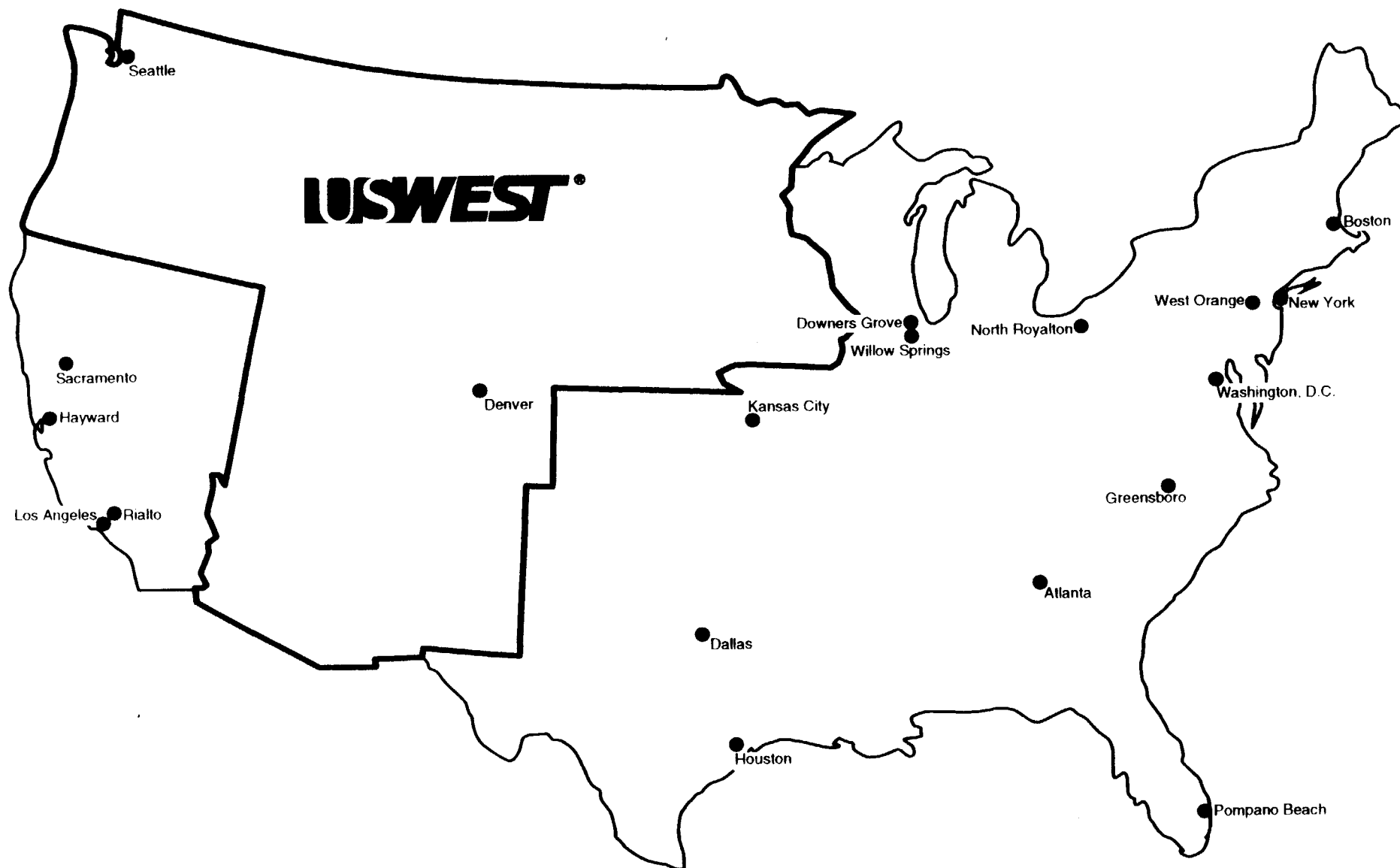
PSINet 45 Mbps DS3 Backbone Cities



GTE Internetworking/BBN Planet 45 Mbps DS3 Backbone Cities



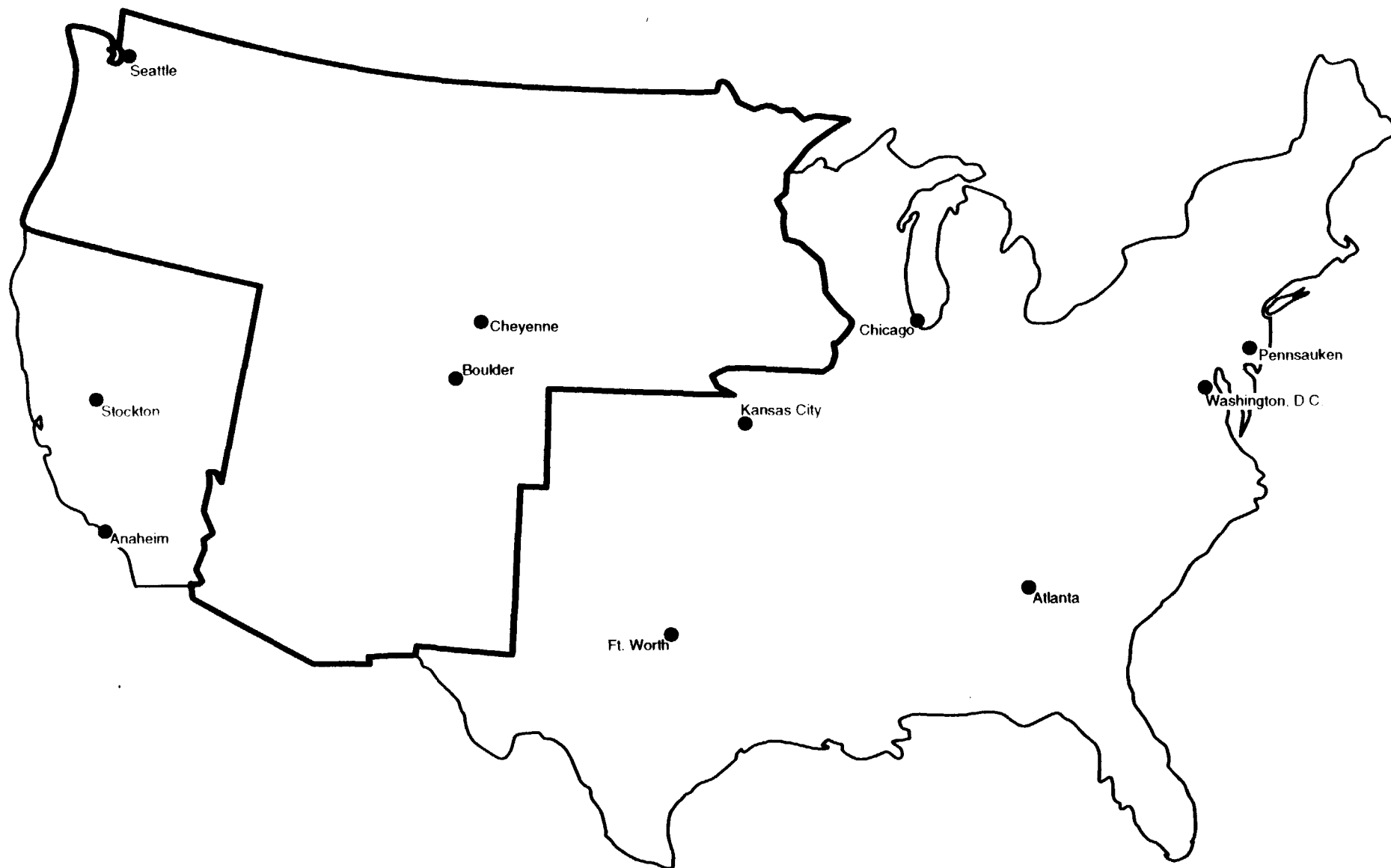
Worldcom, Inc./UUNET 45 Mbps DS3 Backbone Cities



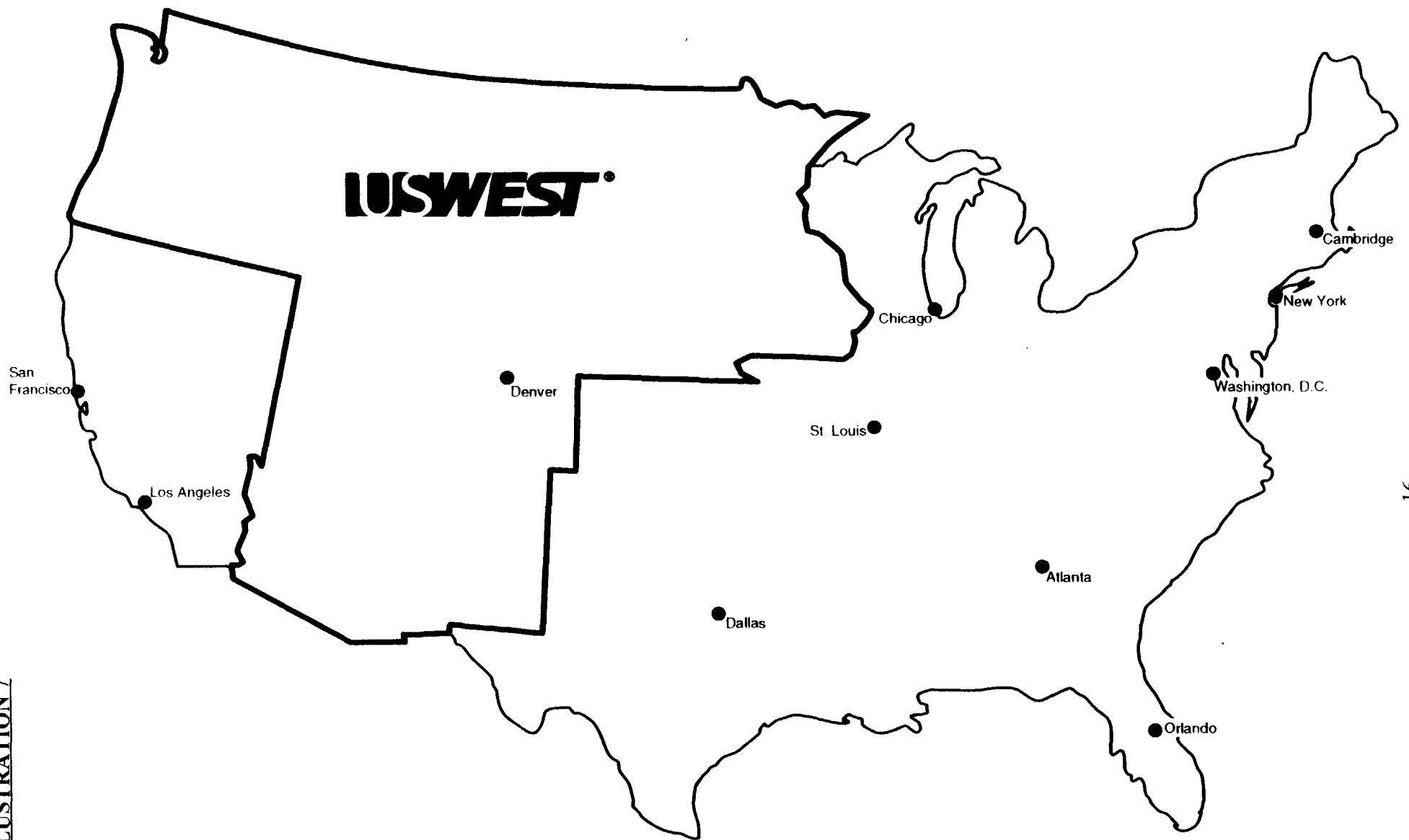
MCI – DS3 and Above Backbone Cities



DIGEX – 45 Mbps DS-3 Backbone Cities



Sprint IP Services 45 Mbps DS3 Backbone Cities



AT&T 45 Mbps DS3 IP Backbone Cities

of high-speed PoPs in U S WEST's region, leaving most of the fourteen-state region without high-speed service. Illustration 8 collects the largest seven networks on a single map, listing the number of national backbone providers serving each city with a DS-3 or faster PoP. Looking at this deployment LATA by LATA, as Illustration 9 does, demonstrates just how poorly the current backbone architecture serves rural America. Even when all thirty-eight national backbone providers for which there is publicly available information are considered, only nine of U S WEST's twenty-seven LATAs are served by more than one high-speed PoP, and seventeen of the twenty-seven are not served at all.^{7/}

Unlike the larger cities shown on the maps, smaller communities in U S WEST's region are connected to the internet by slower links, typically 56 kilobit-per-second or DS-1 (1.54 megabits-per-second) lines. In addition, they are connected into the backbone lower in the hierarchy, meaning that they have more "hops" to the high-speed links of the internet, and their traffic is aggregated with proportionately more traffic from other sources than is the case higher in the hierarchy. Illustrations 10 and 11 show how an ISP in a large city such as Denver might be connected to the internet, and how this compares to the access that an ISP in a smaller city such as Sioux Falls, South Dakota would have. The ISP in Denver would almost surely be

^{6/} (...continued)
region, however, they deploy them (with two exceptions) in the same large cities served by the biggest providers. The smaller networks do operate one additional high-speed PoP in Tacoma, Washington and another one in Santa Fe, New Mexico.

^{7/} If anything, Illustration 9 exaggerates the availability of high-speed links in smaller communities because U S WEST's LATAs are so large, sometimes covering entire states. For example, there is only one high-speed national backbone PoP in all of Wyoming (in Cheyenne); yet, because Wyoming is a single-LATA state, the map depicts the entire state as "served."



Number and Location of AT&T, DIGEX, GTE/BBN Planet, PSINet, Sprint IP Services, MCI and Worldcom/UUNET DS3 Backbone Cities

Source: Boardwatch Magazine (2-98)

Internet Sites in USW Territory (DS3 or Higher)

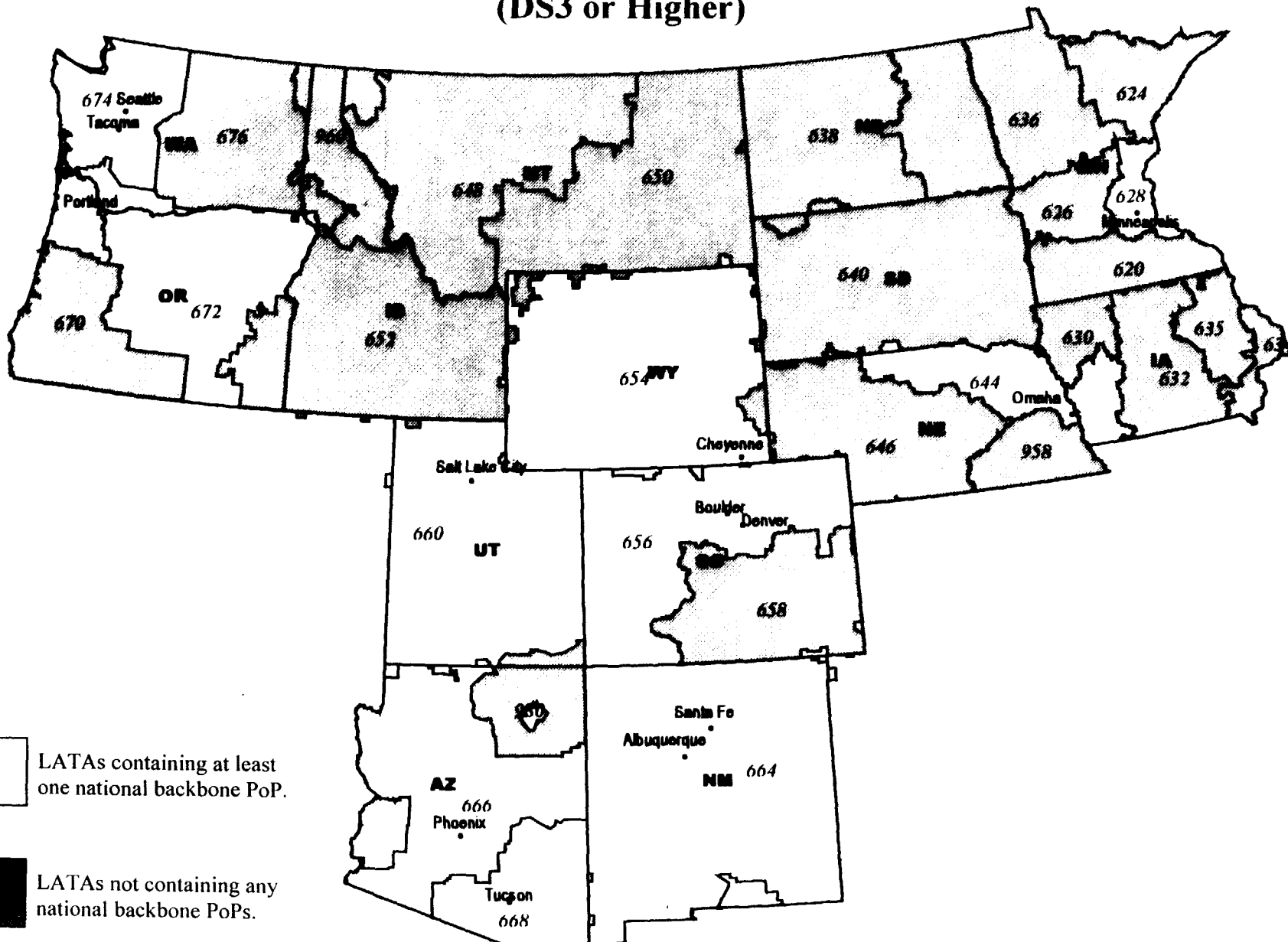
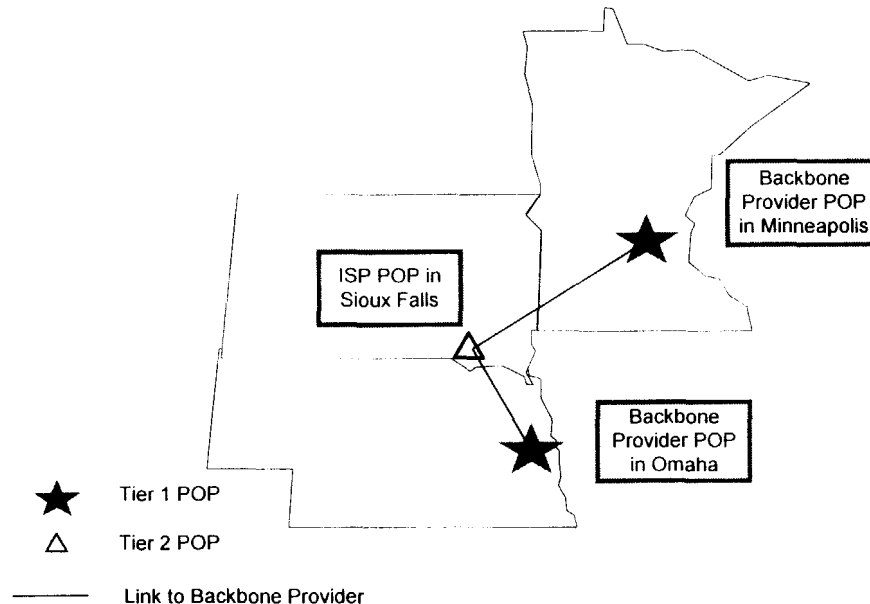


ILLUSTRATION 9

Internet Access

Scenario # 2 : Internet Access in Smaller Market



HIGHER COSTS: Significant facility charges from Sioux Falls to Omaha (184 miles) or from Sioux Falls to Minneapolis (270 miles). The DS1 backhaul charges can be in excess of \$1300 per month while DS3 backhaul charges can be in excess of \$22,000 per month. Interlata relief would enable US WEST to eliminate these backhaul charges.

LIMITATIONS ON SERVICE: Even DSL customers may experience congestion and bottlenecks to the Internet over fractional DS1 lines and are vulnerable to single points of network failure.

located near at least one of the fourteen competing high-speed PoPs deployed in that city, and would have to pay for transport of its traffic over only a minimal distance to reach a DS-3 or faster connection. But to reach the higher levels of the backbone, the ISP in Sioux Falls would have to pay a remote or regional provider to carry (or "backhaul") its traffic to the nearest high-speed PoPs in Omaha, Nebraska (180 miles away) or Minneapolis (270 miles away). The only available and affordable link may be a DS-1 or fractional DS-1, and the ISP will likely find its traffic aggregated with other parties' traffic over these low-bandwidth links, a process over which it has no control.

Bell Atlantic has already demonstrated that there is significant congestion even at the highest levels (and fastest links) of the internet backbone, with the effect that the nationwide average speed for data transmission on the internet is only 40 kilobits per second.^{8/} Rural subscribers and ISPs face additional chokepoints that slow this traffic even more. Their traffic is aggregated and routed to low-speed PoPs on the backbone. Whereas subscribers in large urban areas can connect to multiple and redundant PoPs, smaller communities are generally served by only a single PoP, and congestion or a technical failure at this PoP will effectively cut them off from the internet entirely. In addition, because rural subscribers and ISPs connect to the backbone lower in the hierarchy, their connections are of lower quality and more prone to congestion than similar connections in urban areas.

^{8/} See White Paper, attached to Petition of Bell Atlantic Corporation for Relief from Barriers to Deployment of Advanced Telecommunications Services, at 21-27, CC No. 98-11 (filed Jan. 26, 1998)

Small-city and rural backbone connections are not only of poorer quality than their urban counterparts, but also far more expensive. On top of their normal monthly charges for access to the internet, ISPs must pay distance-sensitive charges ("backhauling charges") to transport their data to a backbone provider's PoP. If the ISP is located in a city with a PoP (as is the Denver ISP depicted in Illustration 10), these backhauling charges will be minimal. But the charges can be overwhelming for ISPs in smaller cities and rural areas. As noted above, an ISP in Sioux Falls, South Dakota (Illustration 11) must pay to haul its traffic either 180 miles to Digex's DS-3 PoP in Omaha or 270 miles to the UUNet or GTE PoPs in Minneapolis. A DS-1 link over the shorter route will cost the ISP more than \$1,300 each month, and the cost will jump to over \$22,000 per month for a DS-3 link.^{2/} The expense of backhauling itself exacerbates network congestion problems: ISPs are driven to minimize backhauling costs by using the slowest links they can (DS-1s and fractional DS-1s) to connect to the backbone provider's PoP.

The lack of adequate backbone in smaller and rural communities stunts the deployment of advanced communications services and technologies to these areas. An ISP in a smaller market cannot offer its subscribers sophisticated information services if its only affordable connection to the internet is a fractional DS-1 that is continuously congested and becomes inoperable with every network failure at the sole PoP serving the market. Similarly, there is no point in rolling out high-bandwidth transmission technologies, such as digital subscriber lines, to local exchange customers in these smaller markets; chokepoints on the

^{2/} As explained in greater detail below, allowing U S WEST to deploy a national internet backbone with a high-speed PoP in Sioux Falls would enable the ISP to avoid paying these backhauling charges.